

IN THE DRAWINGS

The Examiner's permission is requested to make the following changes:

- FIGs. 1-4 add the legend "Prior Art".

As required under 37 CFR 1.84 "Annotated Sheet Showing Changes" and Replacement Sheets for Figures 1-4 are attached hereto.

REMARKS/ARGUMENTS

Applicants have studied the Office Action dated June 13, 2005 and have made amendments to the claims. It is submitted that the application, as amended, is in condition for allowance. Claims 4-5 and 15 have been cancelled without prejudice. By virtue of this amendment, claims 1-3, 6-14 and 16-20 are pending. Claims 1, 6-9, 12, and 16-18 are amended. Reconsideration and allowance of the pending claims in view of the above amendments and the following remarks is respectfully requested.

In the Office Action, the Examiner:

- (1) objected to drawings 1-4 under MPEP § 608.02(g) for omitting the legend "Prior Art";
- (2) objected to the drawings under 37 CFR 1.83(a) for features claimed but not shown in the drawings;
- (3-4) rejected claims 6-9 and 16-18 under 35 U.S.C. § 112, second paragraph as being incomplete for omitting essential structural cooperative relationships of elements;
- (5-6) rejected claims 1-3, 5-14, and 16-20 under 35 U.S.C. § 102(e) as being anticipated by Chen et al. (U.S. Patent No. 6,538,486); and
- (7-8) rejected claims 4 and 15 under 35 U.S.C. § 103(a) as being unpatentable over Chen et al. (U.S. Patent No. 6,538,486).

(1) Objection to the Drawings for Reference Signs Omitted

As noted above, the Examiner objected to drawings 1-4 under MPEP § 608.02(g) for omitting the legend "Prior Art". In amended Figures 1-4, the previously omitted legend "Prior Art" has been added. As required under 37 CFR 1.84 "Annotated Sheet Showing Changes" and Replacement Sheets are attached hereto. Applicants submit that the Examiner's objections to the Drawings have been overcome and the Examiner's rejection should be withdrawn.

(2) Objection to the Drawings for Features Not Shown

As noted above, the Examiner objected to the drawings under 37 C.F.R. 1.83(a) for not showing every feature of the invention specified in the claims. Specifically, the Examiner stated that the diode-connected transistor of claim 6 must be shown or the feature cancelled from the claim.

Claim 6 has been amended to remove the modifier "diode-connected." It is therefore believed that the drawings are in compliance with the requirements of 37 C.F.R. 1.83(a). Applicants submit that the Examiner's objections to the Drawings have been overcome and the Examiner's rejection should be withdrawn.

(3-4) Rejection under 35 U.S.C. §112

The Examiner rejected Claims 6-9 and 16-18, under 35 U.S.C. § 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements.

Claims 6-9 and 16-18 have been amended to add proper structure and interrelationships between the elements. Support for these amendment may be found in the specification as originally filed, see for example FIG. 6. No new matter was added.

In view of the amendment to Claims 6-9 and 16-18 and the remarks above, Applicants believe that the rejection of Claims 6-9 and 16-18 under 35 U.S.C. § 112, second paragraph, as discussed above, has been overcome. Applicants request that the Examiner withdraw the rejection of Claims 6-9 and 16-18.

(5-6) Rejection under 35 U.S.C. §102(b)

As noted above, the Examiner rejected claims 1-3, 5-14, and 16-20 under 35 U.S.C. § 102(e) as being anticipated by Chen et al. (U.S. Patent No. 6,538,486).

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful. Amended independent claims 1 and 12 recite, *inter alia*:

a latch circuit for sampling a differential data signal in response to a first strobe signal;

a delay element, the first strobe signal being an input to the delay element; and

a strobe circuit coupled to the latch circuit, the strobe circuit capturing the output of the latch circuit based on a second strobe signal output from the delay element. (emphasis added)

Claim 1 has been amended to add a delay element outputting a second strobe signal to the strobe circuit.

As the Examiner correctly recognizes on page 7 of the Office Action, "Chen et al. does not disclose that the first strobe signal is delayed to produce a second strobe signal". Therefore, Chen et al. does not disclose a delay element.

The Examiner cites 35 U.S.C. § 102(e) and a proper rejection requires that a single reference teach (i.e., identically describe) each and every element of the rejected claims as being anticipated by Chen et al.¹ Because the elements in independent claims 1 and 12 of the instant application are not taught or disclosed by Chen et al., the apparatus of Chen et al. does not anticipate the present invention. The dependent claims are believed to be patentable as well because they all are ultimately dependent on either claim 1 or 12. Accordingly, the present invention distinguishes over Chen et al. for at least this reason. The Applicants respectfully submit that the Examiner's rejection under 35 U.S.C. § 102(e) has been overcome.

(7-8) Rejection under 35 U.S.C. §103(a)

As noted above, the Examiner rejected claims 4 and 15 under 35 U.S.C. § 103(a) as being unpatentable over Chen et al. (U.S. Patent No. 6,538,486).

¹ See MPEP §2131 (Emphasis Added) "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim."

It is initially noted that claims 4 and 15 have been cancelled from the instant application and their limitations have been added to independent claims 1 and 12, respectively. The following remarks concerning the Examiner's rejection of claims 4 and 15 therefore applies to the limitations of amended claims 1 and 12.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful. Amended independent claims 1 and 12 recite, *inter alia*:

a latch circuit for sampling a differential data signal in response to a first strobe signal;

a delay element, the first strobe signal being an input to the delay element; and

a strobe circuit coupled to the latch circuit, the strobe circuit capturing the output of the latch circuit based on a second strobe signal output from the delay element. (emphasis added)

The present invention is a differential data sampling circuit that samples an input signal line with precise timing so as to provide reduced sensitivity to noise. The differential data sampling circuit includes a latch circuit for initially sampling a differential data signal in response to a first strobe signal. The latch circuit operates to rapidly capture the signal level present on the input signal line. The output of the latch circuit is then sampled by a strobe circuit in order to capture and hold the output of the latch circuit based on a second strobe signal.

The strobe signal that is used to trigger the latch circuit is delayed by a **delay element** (522) before being supplied to the strobe circuit. The use of a strobe signal that is delayed from the strobe signal input to the latch circuit allows the output of the latch circuit to settle prior to capture by the strobe circuit.

The Chen et al. reference discloses a latch chain with improved input voltage sensitivity. Chen et al. provides a modified latch that is more sensitive to input voltage than a pair of conventional latches that are provided downstream from the modified latch and an amplifier. In Chen et al., all three latches are run from a single output of a clock (22). See, Chen et al., FIG. 2.

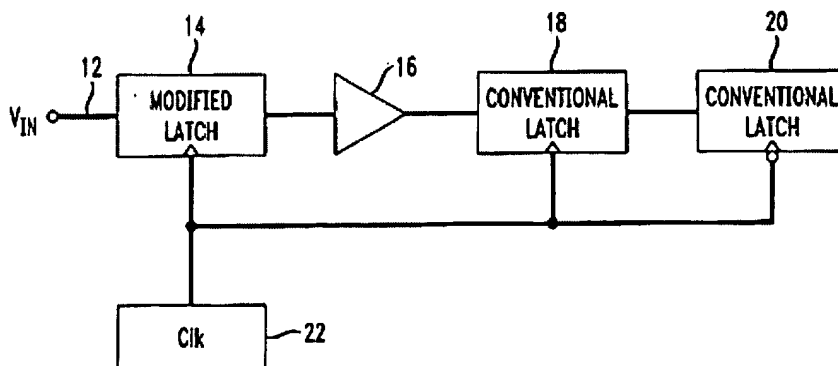
The Examiner, on page 7 of the Office Action, states that "it would have been obvious...when building or carrying out Chen et al invention...to implement a delay to delay the second strobe..." Applicants respectfully disagree with the Examiner's conclusion and submit that Chen et al. actually *teaches away* from a delay circuit for the clock signal being provided to the various latch circuits.

Chen et al. does not mention a delay element in the clock path. Chen et al. does not unintentionally omit this element, however. Timing is discussed in col. 3, lines 24-41 of Chen et al., where it is taught that the amplifier should be configured to have a one half clock cycle delay between receipt of the output voltage from the modified latch and transmission of the amplified output voltage to the next latch. Therefore, timing is contemplated by Chen et al. and is included in the signal path, not in the clock/strobe path as is set forth for the presently claimed invention.

Each of the latches (14, 18, & 20) of Chen et al. has a sample period and a hold period triggered by signals from an external clock (22). Chen et al., col. 2, lines 25-26. The Chen et al. circuit is shown below:

FIG. 2

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The Examiner on page 5 of the Office action analogizes conventional latches 18 and 20 of Chen et al. to latch circuit 512 and strobe circuit 300 of the present invention,

respectively. Although it is not mentioned in the specification, the above circuit of Chen et al. shows an important feature that would make any type of a delay element in the clock signal line between conventional latches 18 and 20 of Chen et al. render the circuit inoperable. FIG. 2 of Chen et al. shows an inverter at the clock input to the latch 20. The inverter ensures that while the first conventional latch (18) is holding, the second conventional latch (20) is sampling. When the clock cycle switches, the second conventional latch (20) holds the previously held output value of the first conventional latch (18) and the first conventional latch (18) begins sampling again. A delay element inserted in the clock signal line between the first latch and second latch, as the Examiner suggests would be obvious, would destroy the intent of Chen et al. because the signal previously held by the first latch would be gone by the time the second latch was signaled to hold.

With regards to further teachings contained in the above circuit of Chen et al., the input signal V_{IN} 12 is delayed by the modified latch 14, and the buffer 16, prior to being provided to the conventional latch 18. The delay of buffer 16 is designed to match the delays of the other latch circuits. Chen, et al. column 3, lines 24-40. Chen et al. further teaches an embodiment wherein cascaded amplifiers are used to generate a proper delay. Chen et al., column 3, lines 41-51 and FIG. 3. A delay element inserted in the clock signal line between the modified latch 14 and conventional latch 18, would destroy the intent of Chen et al. because the Chen et al. system is based upon the delay being provided by amplifier 16. In addition to destroying the intent of Chen et al., such a combination would be inoperable due to the fact that the delay provided amplifier 16 of Chen et al. requires an undelayed clock to be delivered to latch 18.

References that produce seemingly inoperative devices cannot serve as predicates for a prima facie case of obviousness.²

² Michael L. McGinely versus Franklin Sports, Inc. (Fed Cir 2001) ("If references taken in combination would produce a 'seemingly inoperative device,' we have held that such references teach away from the combination and thus cannot serve as predicates for a prima facie case of obviousness."); In re Spinnoble, 405 F.2d 578, 587, 160 USPQ 237, 244 (CCPA 1969) (references teach away from combination if combination produces seemingly inoperative device); see also In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984) (inoperable modification teaches away).

When there is no suggestion or teaching in the prior art for "a delay element" for the clock signals, the suggestion can not come from the Applicant's own specification. The Federal Circuit has repeatedly warned against using the Applicant's disclosure as a blueprint to reconstruct the claimed invention out of isolated teachings of the prior art. See MPEP § 2143 and *Grain Processing Corp. v. American Maize-Products*, 840 F.2d 902, 907, 5 USPQ2d 1788 1792 (Fed. Cir. 1988) and *In re Fitch*, 972 F.2d 160, 12 USPQ2d 1780, 1783-84 (Fed. Cir. 1992). The prior art reference Chen et al. does not even suggest, teach or mention a delay element as recited in amended claims 1 and 12 of the instant application. Claims 1 and 12 are, therefore, believed to be patentable over the art. The dependent claims are believed to be patentable as well because they all are ultimately dependent on either claim 1 or claim 12.

CONCLUSION

The remaining cited references have been reviewed and are not believed to affect the patentability of the claims as amended.

In this Response, Applicants have amended certain claims. In light of the Office Action, Applicants believe these amendments serve a useful clarification purpose, and are desirable for clarification purposes, independent of patentability. Accordingly, Applicants respectfully submit that the claim amendments do not limit the range of any permissible equivalents.


Applicants acknowledge the continuing duty of candor and good faith to disclosure of information known to be material to the examination of this application. In accordance with 37 CFR §1.56, all such information is dutifully made of record. The foreseeable equivalents of any territory surrendered by amendment are limited to the territory taught by the information of record. No other territory afforded by the doctrine of equivalents is knowingly surrendered and everything else is unforeseeable at the time of this amendment by the Applicants and their attorneys.

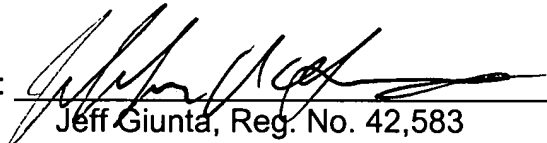
Applicants respectfully submit that all of the grounds for rejection stated in the Examiner's Office Action have been overcome, and that all claims in the application are allowable. No new matter has been added. It is believed that the application is now in condition for allowance, which allowance is respectfully requested.

PLEASE CALL the undersigned if that would expedite the prosecution of this application.

Respectfully submitted,

Date: October 13, 2005

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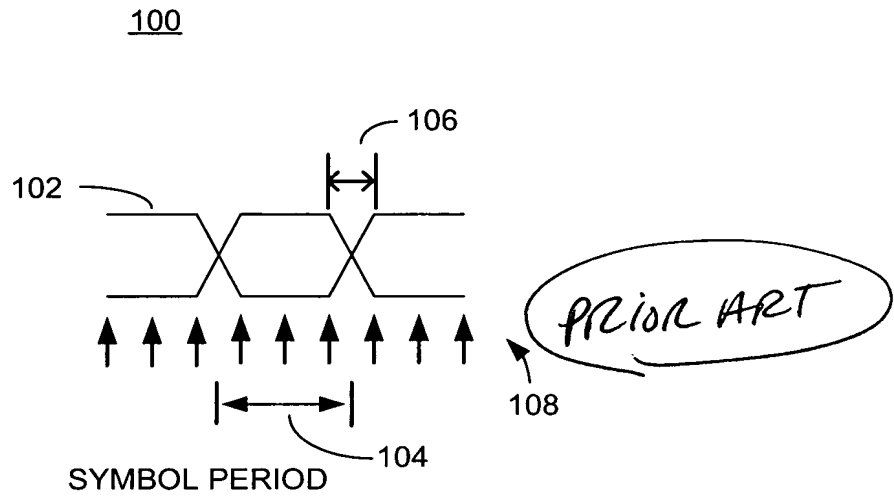


FIG. 1

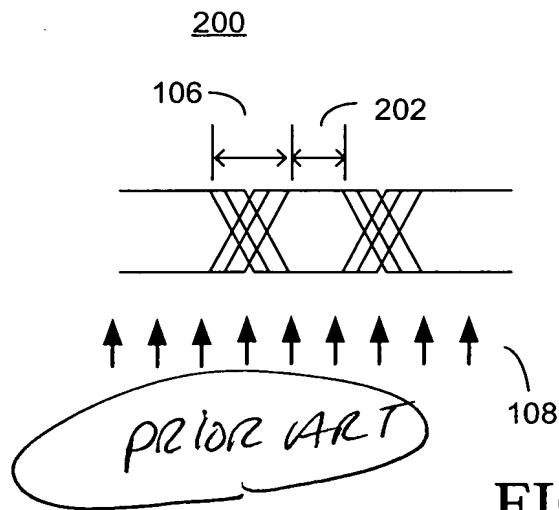
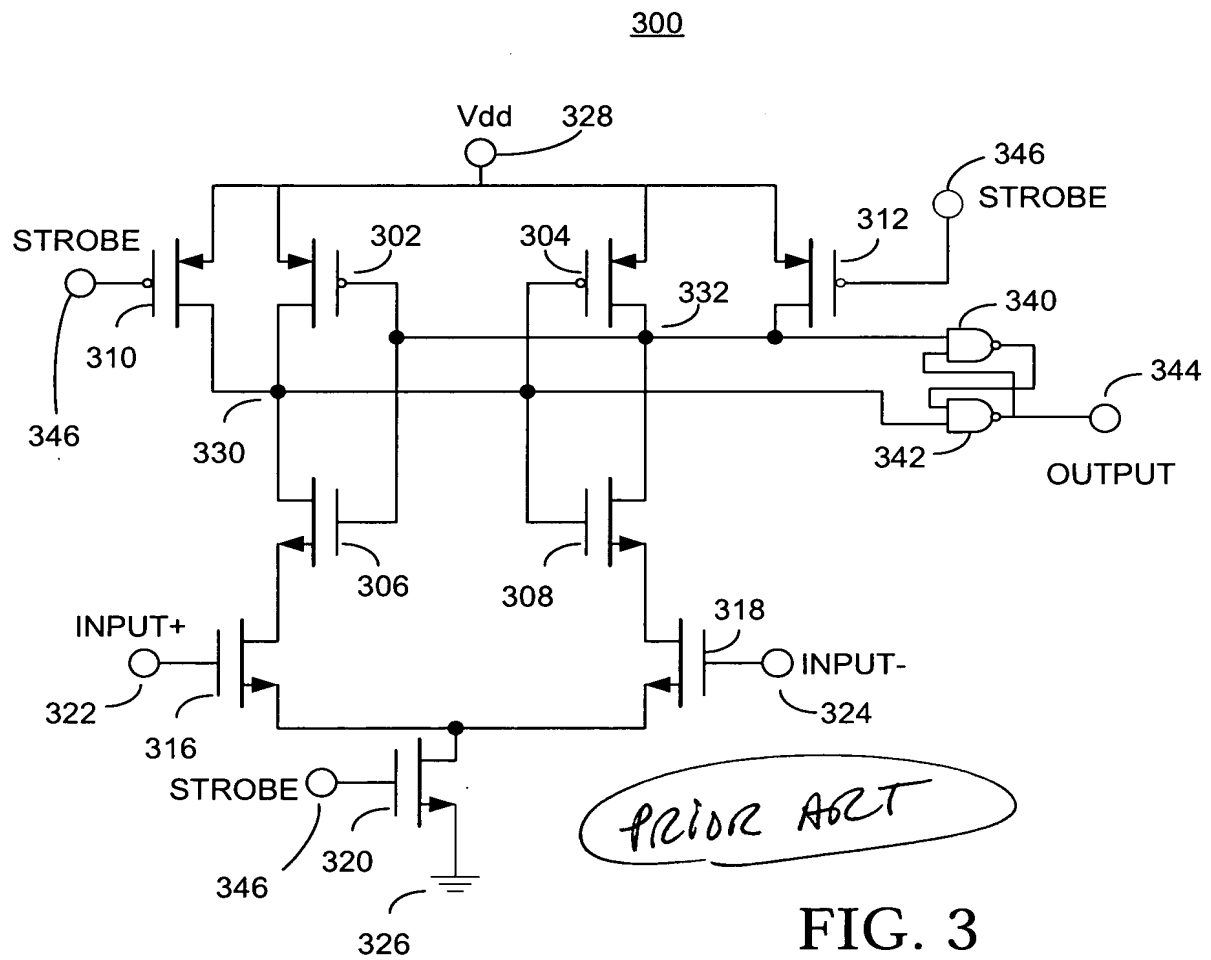


FIG. 2

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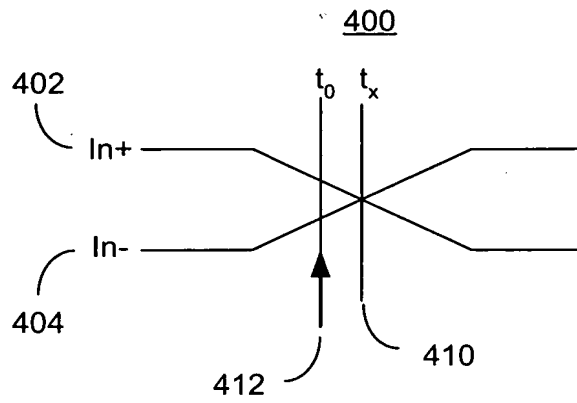


FIG. 4

Prior Art

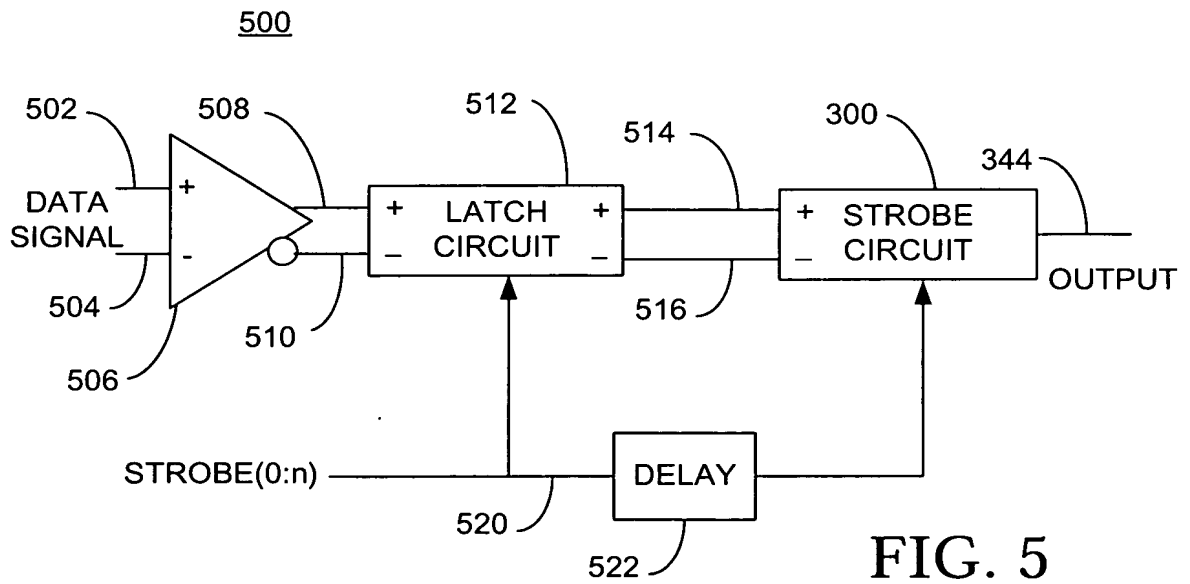


FIG. 5